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United States  
Department of  
Agriculture

Soil  
Conservation  
Service

Spokane,  
Washington



# Water Supply Outlook for Washington

as of APRIL 1, 1984





## TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: "Spring is on its way"

### PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, Federal Building 230 N. First Ave., Phoenix, Arizona 85025
Colorado (N. Mex.)	P.O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th St., Boise, Idaho 83702
Montana	P.O. Box 98, Bozeman, Montana 59715
Nevada	P.O. Box 4850, Reno, Nevada 89505
Oregon	1220 S. W. Third Ave., Portland, Oregon 97204
Utah	4402 Federal Bldg., 125 South State St., Salt Lake City, Utah 84147
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P.O. Box 2440, Casper, Wyoming 82601

### PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Snow Surveys Branch, California Department of Water Resources, P.O. Box 388, Sacramento, California 95802 — for British Columbia by the Ministry of the Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia V8V 1X5 — for Yukon Territory by the Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory Y1A 3V1 — and for Alberta, Saskatchewan, and N.W.T. by the Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta T3C 1A6.



# **WATER SUPPLY OUTLOOK FOR WASHINGTON**

and

**FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS**

ISSUED BY

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**SOIL CONSERVATION SERVICE**

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**RIVER FORECAST CENTER  
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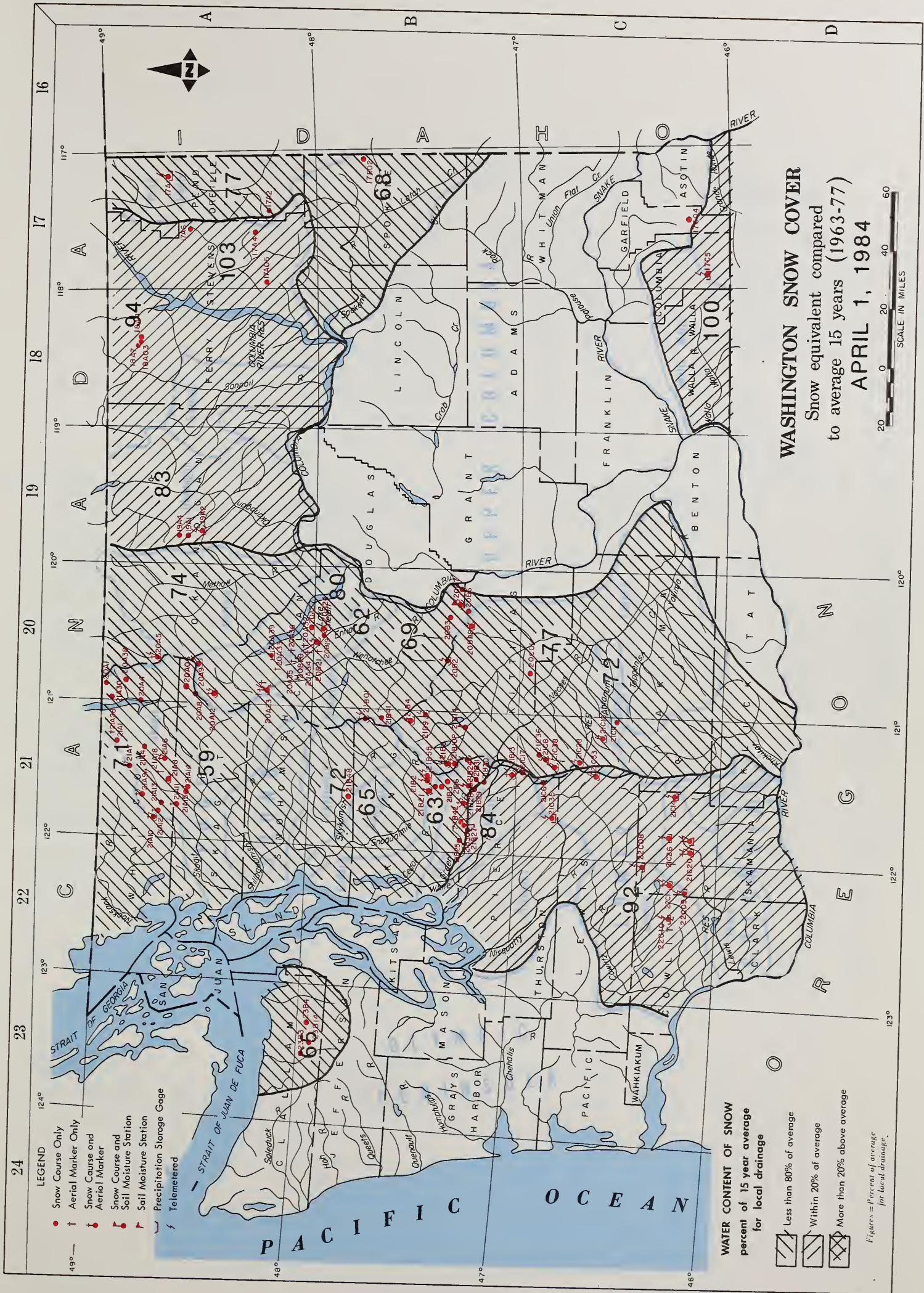
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SPOKANE, WASHINGTON 99201**









INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.	NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE						LOWER COLUMBIA DRAINAGE					
Pend Oreille River						Asotin Creek					
Boyer Mountain	17A2	7	31N	43E	5250	Spruce Springs	17C4	9	8N	40E	5700
Bunchgrass Meadow	17A1SP	24	37N	44E	5000	Touchet River					
Kettle River						Touchet No. 2	17C5SP	6	7N	40E	5530
Summit G. S.	18A7	20	39N	35E	4600	Lewis River					
Butte Creek	18A3	28	39N	35E	4070	June Lake	22C09SP	26	8N	5E	3200
Goot Creek	18A4	26	39N	35E	3595	Lane Pine Shelter	21C26SP	8	9N	7E	3800
Spokane River						Plains at Abraham	22C13P	35	9N	5E	4400
Ragged Ridge	17B02	12	27N	45E	3333	Spencer Meadow	21C20SP	16	8N	7E	3400
Colville River						Surprise Lakes	21C13SP	14	7N	8E	4250
Baird	17A6	19	36N	42E	3215	Cowlitz River					
Stranger Mountain	17A5	26	31N	38E	4990	Cayuse Pass	21C6	15	16N	10E	5300
Chevelah	17A4	11	32N	41E	4925	Pigtail Peak	21C33SP	11	13N	11E	5900
Okonegan River						Paradise Hill	21C14SP	36	10N	10E	4500
Mutton Creek No. 1	19A1	30	37N	24E	5700	Sheep Canyon	22C10SP	12	8N	4E	4050
Mutton Creek No. 2	19A4	19	37N	24E	6000	Strawberry	22C08SP	9	10N	6E	3280
Solomon Meadows	19A2SP	33	37N	24E	4500	Nisqually River					
Methow River						Paradise Park (New)	21C35SP	13	15N	8E	5500
Harts Pass	20A5SP	7	37N	18E	6500	White River					
Chelan Lake Basin						Corral Pass	21B13SP	30	18N	11E	6000
Lyman Lake	20A23SP	18	31N	16E	5900	Green River					
Park Creek Ridge	20A12SP	18	34N	16E	4600	Airstrip	21B24P	18	20N	11E	1800
Rainy Pass	20A9SP	21	35N	17E	4780	Charley Creek	21B25	27	21N	8E	1200
Mirror Lake	20A39	30	31N	18E	5600	Cauger Mountain	21B42SP	21	21N	9E	3200
Entiat River						Gauger Mountain No. 2	21B27	14	20N	8E	2900
Brief	20B19	34	28N	19E	1600	Gauger Mountain No. 3	21B28	12	20N	8E	2100
Entiat Meadows	20A33a	28	31N	17E	4540	Lester Creek	21B29	36	20N	10E	3100
Entiat River Trail	20A34a	2	29N	17E	3325	Lynn Lake	21B50	22	20N	8E	4000
Fox Camp	20A36a	17	30N	18E	6510	Sawmill Ridge	21B31	5	19N	11E	4700
Pope Ridge	20B20	22	29N	18E	3540	Stampede Pass	21B10SP	25	21N	11E	3860
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	3540	Tw in Camp	21B30	18	19N	11E	4100
Pugh Ridge	20A32a	34	30N	18E	6725	Cedar River					
Shady Pass	20A37	20	29N	19E	6200	City Cabin	21B3	10	21N	10E	2390
Snow Brushy	20A35a	21	30N	17E	3910	Mt. Gardner	21B21P	30	22N	10E	3300
Tommy Creek	20B21a	10	28N	18E	4900	Snoqualmie River					
Wenatchee River						Alpine Meadow	21B48	31	27N	9E	3500
Berne-Mill Creek (New)	21B41SP	13	26N	14E	3240	Ollalie Meadows	21B2P	19	22N	11E	3625
Blawett Pass No. 2	20B2SP	35	22N	17E	4270	Ollalie Meadows East	21B55SP	20	22N	11E	3700
Stevens Pass	21B1SP	34	26N	13E	4070	Skagit River					
Trough #2	20B25SP	10	20N	20E	5310	Beaver Creek Trail	21A4	35	39N	12E	2200
Squilchuck Creek						Beaver Pass	21A1	9	39N	12E	3680
Beehive Springs	20B3	12	21N	19E	4400	Brown Top	21A2Ba	26	40N	12E	6000
Stemilt Creek						Devils Park	20A4	34	38N	16E	5900
Stemilt Slide	20B6	30	21N	20E	5000	Freezeout Creek Trail	20A1	14	40N	14E	3500
Upper Wheeler	20B7SP	30	21N	20E	4400	Freezeout Meadows (New)	20A38	8	40N	16E	5000
Yakima River						Granite Creek	20A06	25	36N	16E	3500
Ahtanum R. S.	21C11	24	12N	14E	3100	Meadows Cabins	20A8	29	36N	14E	1900
Big Boulder Creek	21B9SP	35	23N	14E	3200	New Hozomeen Lake	21A30	19	40N	14E	2800
Bumping Lake	21C8P	23	16N	12E	3450	Thunder Basin	20A07	10	35N	14E	4200
Bumping Lake New	21C36	13	16N	12E	3400	Baker River					
Bumping Ridge	21C38SP	9	15N	12E	4600	Dock Butte	21A11A	8	36N	8E	3800
Fish Lake	21B4SP	28	24N	14E	3371	Easy Pass	21A7A	19	39N	11E	5200
Green Lake	21C10SP	3	12N	13E	6000	Jasper Pass	21A6A	17	38N	11E	5400
Grouse Camp	20B11SP	29	21N	19E	5585	Marten Lake	21A9A	23	38N	8E	3600
Lake Cle Elum	21B14M	15	20N	14E	2200	Mount Blum	21A18a	27	38N	10E	5800
Morse Lake	21C17SP	6	16N	11E	5400	Rocky Creek	21A12AP	20	37N	8E	2100
Tunnel Avenue	21B8P	13	21N	11E	2450	Schreibers Meadow	21A10AP	18	37N	8E	3400
White Pass (East Side)	21C28SP	2	13N	11E	4500	S. F. Thunder Creek	21A14A	20	36N	9E	2200

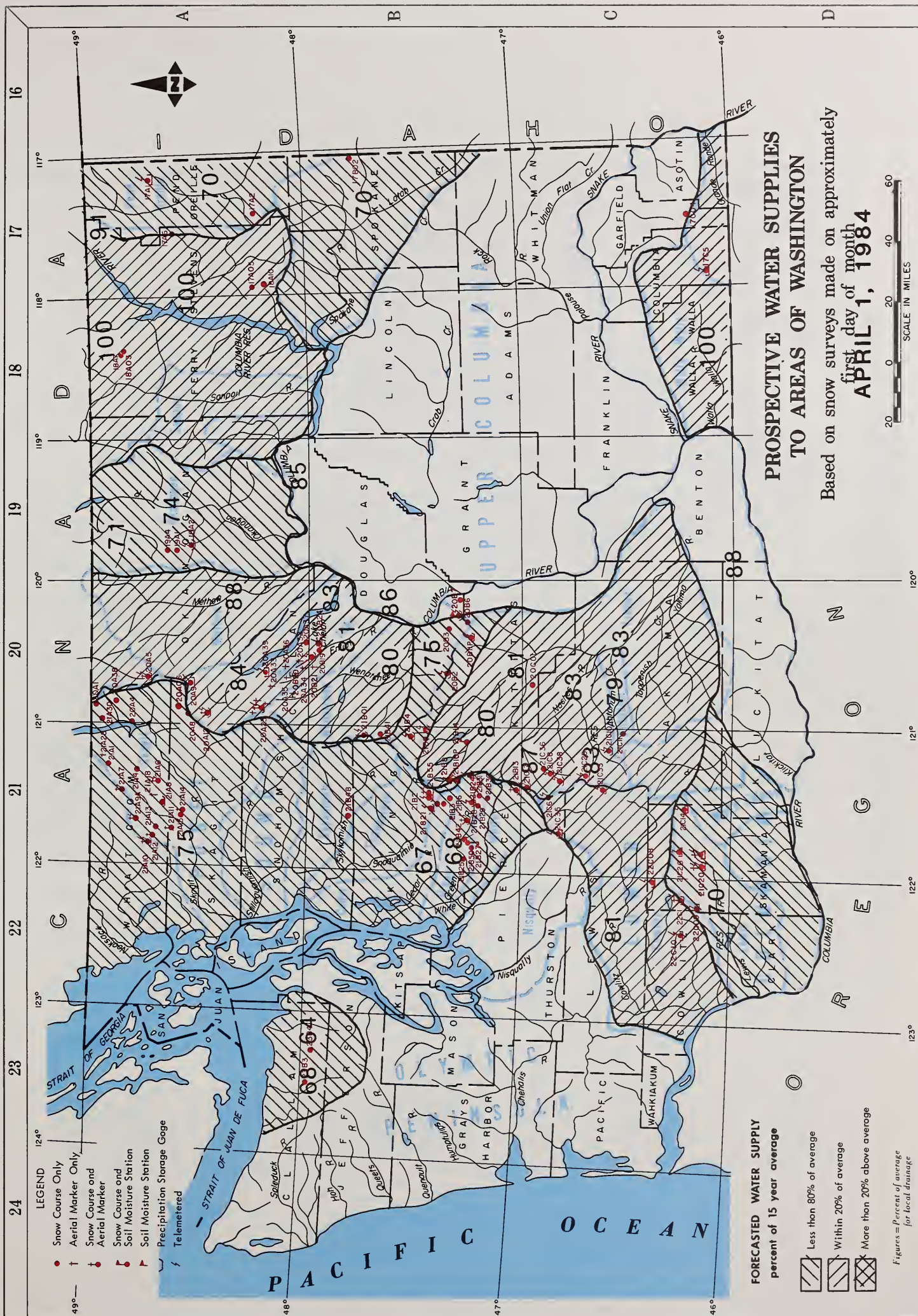
OLYMPIC PENINSULA

Dungeness River					
Deer Park	23B4	1	28N	5W	5200
Elwha River					
Hurricane	23B3	36	29N	7W	4500
Cox Valley					
	23B14	31	29N	6W	4500

LEGEND

- 21A7 Snow Course Only
- 21A7a Aerial Marker Only
- 21A7A Snow Course And Aerial Marker
- 21A7M Snow Course And Soil Moisture Station
- 21A7P Soil Moisture Station
- 21A7P Snow Course And Precipitation Storage Gage
- 21A7SP Precipitation Storage Gage
- 21A7SP Snow Pillow







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Bumping Ridge	21C38SP	9	15N	12E	4600	Thunder Basin	20A07	10	35N	14E	4200
Fish Lake	21B45P	28	24N	14E	3371	LEGEND					
Green Lake	21C10SP	3	12N	13E	6000	21A7	Snow Course Only				
Grouse Camp	20B11SP	29	21N	19E	5285	21A7a	Snow Course Only				
Lake Cle Elum	21B14M	15	20N	14E	2200	21A7A	Snow Course And Aerial Marker				
Morse Lake	21C17SP	6	16N	11E	5400	21A7M	Snow Course And Soil Moisture Station				
Tunnel Avenue	21B8P	13	21N	11E	2450	21A7m	Soil Moisture Station				
White Pass (East Side)	21C28SP	2	13N	11E	4500	21A7P	Snow Course And Precipitation Storage Gage				
						21A7SP	Precipitation Storage Gage				
						21A7SP	Snow Pillow				

Baker River

Dock Butte  
Easy Pass  
Jasper Pass  
Martien Lake  
Mount Blum  
Rackey Creek  
Schreibers Meadow  
S. F. Thunder Creek  
Sulphur Creek  
Three Mile Creek  
Watson Lakes

21A11A  
21A7A  
21A6A  
21A9A  
21A18a  
21A12AP  
21A10AP  
21A14A  
21A13  
21A15  
21A8P

8 36N  
19 39N  
17 38N  
23 38N  
27 38N  
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OLYMPIC PENINSULA

Dungeness River

Deer Park

2384

1 28N

5W

5200

Elwha River

Hurricane

2383

36 29N

7W

4500

LEGEND

21A7  
21A7a  
21A7A  
21A7M  
21A7m  
21A7P  
21A7SP

Snow Course Only  
Snow Course Only  
Snow Course And Aerial Marker  
Snow Course And Soil Moisture Station  
Soil Moisture Station  
Snow Course And Precipitation Storage Gage  
Precipitation Storage Gage  
Snow Pillow



## WATER SUPPLY OUTLOOK

State of Washington

April 1, 1984

The water supply forecast for most of Washington continued to deteriorate during March. Water users in the Olympic's and the Puget Sound areas can expect below normal runoff this spring and summer. The mountain snowpack ranges well below average to average. It is below average in the Spokane, Pend Oreille, Yakima, Wenatchee, Entiat and Methow Rivers. The Northwest Cascade slopes show well below average snowpack, with the Skagit having less than 59 of normal. Fall and winter precipitation was above normal in all sections of the state. Reservoir storage is very good for April 1. Streamflow continued above average throughout the state.

### SNOW COVER

Puget Sound Watersheds are well below normal. They range from a low of 59% on the Skagit, to 88% on the White River. Olympic Peninsula streams are also below average with the Elwha and the Dungeness having a snowpack at 65% of normal. The other areas of the state with much below average snowpack are the Spokane and Pend Oreille River drainages which have 68% and 77% of normal. The Entiat River snow courses showed the greatest decline having a 62% of average snow cover.

The Kettle River continues to be near average, as does the Cowlitz River. The Blue Mountain area of the state and the Collville River have the best snowpack being near 100%. All other areas in the state are between 80 and 90% of average.

## PRECIPITATION

Precipitation during the November-March winter period has been above average over the entire state except the Southwest Cascade area. During this period the Puget Sound area received 57.56 inches, 104% of normal. The Yakima area received 28.14 inches, 102% of normal. Precipitation in the northeastern area was 125% of normal.

## RESERVOIR STORAGE

Stored water supplies are very good for April 1, with all sections of the state reporting above average storage. The Yakima irrigation reservoirs are storing 914,400 acre feet of water compared to the April 1 average of 741,500, or 123% of normal. The reservoirs in the Okanogan Irrigation District are at capacity. Lake Chelan is at 296,400 acre-feet, 101% of normal and Banks Reservoir is at 902,600 acre-feet.

## STREAMFLOW

River flows during March were above average for most of the state. Streams which had above average runoff for March included the Kettle River at 279%, the Okanogan River at 153%, the Chelan River at 136% and the Yakima River at 125%. The Pend Oreille River at 88% was the only major stream reporting below average streamflow.

Forecasts for spring and summer streamflow will be within 20% of average over most of the state. The Puget Sound rivers are still forecast below average, with the Skagit at 75%, the Cedar at 75% and the Dungeness at 71%. The forecasts for the streams in the Yakima Basin remains nearly constant with 80% at Parker and 81% at Cle Elum. Some forecasts for the rest of the state are, the Wenatchee at 80%, the Methow at 80% and the Okanogan at 79%. The Spokane Rivers forecasts have been reduced to 70%.



# STREAMFLOW FORECASTS - APRIL 1984

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts. These forecasts are made as a product of the cooperative efforts of the Soil Conservation Service and the National Weather Service.

Streamflow figures for 1982 and 1983 are preliminary and subject to revision.

Basin, Stream and Station	Forecast Runoff 1984	Seasonal Streamflow in Thousands of Acre-Feet					
		% 20-Yr. Avg.	Fore- cast period	1983	1982	1981	20-Yr. Average 61-80
		<u>COLUMBIA BASIN</u>					
<u>COLUMBIA RIVER SYSTEM</u> /1/							
Columbia River	40600	91	Apr-Sept	43225	48575	48531	44605
at Birchbank	32500	91	Apr-July	34569	38210	38501	35705
	23700	91	Apr-June	24281	27454	27002	26027
Columbia River	56800	85	Apr-Sept	46662	56425	70303	66841
at Grand Coulee	47700	85	Apr-July	34933	43821	58525	56169
	37400	85	Apr-June	26597	32610	44235	44036
Columbia River bl.	62600	86	Apr-Sept	44560	79386	77308	72781
Rock Island Dam	53000	86	Apr-July	58672	66629	64689	61601
	41600	86	Apr-June	69844	50985	49348	48384
Columbia River at	88300	88	Apr-Sept	103682	118503	96188	101000
The Dalles, OR	74000	86	Apr-July	88273	101631	81125	86500
	60000	86	Apr-June	70038	80122	63521	70100
<u>PEND OREILLE RIVER SYSTEM</u>							
Pend Oreille River	10800	70	Apr-Sept	12841	17721	13896	15425
bl. Box Canyon	9900	70	Apr-July	11482	16324	13179	14156
	8560	70	Apr-June	9226	13306	11594	12227
<u>KETTLE RIVER SYSTEM</u>							
Kettle River	1830	100	Apr-Sept	2709	2330	2184	1829
nr. Laurier	1740	100	Apr-July	2534	2174	2013	1738
	1580	100	Apr-June	2251	1747	1657	1581
Colville River	134	100	Apr-Sept	182	160	125	134
at Kettle Falls	123	100	Apr-July	161	146	111	123
	114	100	Apr-June	144	132	95	114

/1/ Observed flow corrected for storage in any of the following reservoirs which are above the station: Kootenay Lake, Hungry Horse, Flathead Lake, Pend Oreille Lake, F. D. Roosevelt Lake, Lake Chelan, Coeur d'Alene Lake, Brownlee, Noxon Reservoir and pumpage at F. D. Roosevelt Lake.

Basin, Stream and Station	Forecast Runoff 1984	Seasonal Streamflow in Thousands of Acre-Feet					
		% 20-Yr. Avg.	Fore- cast period	1983	1982	1981	20-Yr. Average 61-80
<u>SPOKANE RIVER SYSTEM</u>							
Spokane River /2/ at Post Falls, ID	2000	70	Apr-Sept	M	M	2238	2848
	1920	70	Apr-July	M	M	2145	2754
<u>OKANOGAN RIVER SYSTEM</u>							
Similkameen River	1040	71	Apr-Sept	1490	1638	1241	1462
nr. Nighthawk	970	71	Apr-July	1356	1491	1118	1365
	825	71	Apr-June	1155	1166	930	1161
Okanogan River	1210	74	Apr-Sept	2170	2046	1631	1644
nr. Tonasket	1110	74	Apr-July	1891	1712	1416	1497
	930	74	Apr-June	1569	1306	1107	1262
<u>METHOW RIVER SYSTEM</u>							
Methow River nr. Pateros	864	88	Apr-Sept	1354	1203	786	980
	800	88	Apr-July	1243	1120	724	908
	680	88	Apr-June	1094	918	602	773
<u>CHELAN RIVER SYSTEM</u>							
Chelan River at Chelan /3/	1000	83	Apr-Sept	1261	1376	916	1203
	875	83	Apr-July	1104	1223	798	1055
	685	83	Apr-June	901	958	621	826
Stehekin River at Stehekin	720	84	Apr-Sept	M	938	662	860
	610	84	Apr-July	727	800	543	727
	465	84	Apr-June	572	603	403	553
Entiat River nr. Ardenvoir	190	81	Apr-Sept	292	282	186	235
	173	81	Apr-July	263	258	168	213
	140	81	Apr-June	221	206	137	172
<u>WENATCHEE RIVER SYSTEM</u>							
Wenatchee River nr. Plain	1020	80	Apr-Sept	M	M	M	1270
	910	80	Apr-July	M	M	M	1136
	720	80	Apr-June	M	M	M	899
Wenatchee River at Peshastin	1370	80	Apr-Sept	1590	2013	1188	1712
	1235	80	Apr-July	1432	1791	1075	1545
	990	80	Apr-June	1191	1429	869	1237
Stemilt Basin nr. Wenatchee	104 *	75	May-Sept	M	M	M	**138
Icicle Creek nr. Leavenworth	291	79	Apr-Sept	M	M	M	**370
	270	79	Apr-July	M	M	M	**340
	213	79	Apr-June	M	M	M	**270

\* Thousands of Miners' Inches.

\*\* Average computed for 1963-1977.

/2/ Forecasts made by Jerry Beard, Soil Conservation Service, Boise, Idaho.  
Observed flow corrected for storage in Coeur d'Alene Lake.

/3/ Observed flow corrected for storage in Lake Chelan.



Basin, Stream and Station	Seasonal Streamflow			in Thousands of Acre-Feet			
	Forecast Runoff 1984	% 20-Yr. Avg.	Fore- cast period	1983	1982	1981	20-Yr. Average 61-80
<u>YAKIMA RIVER SYSTEM</u>							
Yakima River	116	83	Apr-Sept	109	152	95	139
nr. Martin /4/	107	83	Apr-July	96	138	82	128
	93	83	Apr-June	81	121	73	111
Yakima River	760	81	Apr-Sept	733	1100	700	943
at Cle Elum /5/	688	81	Apr-July	659	1010	643	854
	592	81	Apr-June	589	883	563	734
Yakima River	1680	80	Apr-Sept	2221	2434	1194	2096
nr. Parker /6/	1520	80	Apr-July	1958	2193	1059	1898
	1330	80	Apr-June	1722	1909	961	1667
Kachess River	100	83	Apr-Sept	105	134	81	121
nr. Easton /7/	95	83	Apr-July	96	126	72	115
	84	83	Apr-June	84	110	66	101
Cle Elum River	400	86	Apr-Sept	421	516	313	463
nr. Roslyn /8/	365	86	Apr-July	381	468	282	422
	305	86	Apr-June	324	392	244	353
Bumping River /9/	124	87	Apr-Sept	137	161	78	142
nr. Nile	112	87	Apr-July	128	147	70	129
	93	87	Apr-June	109	123	63	107
American River	103	83	Apr-Sept	M	140	63	124
nr. Nile	94	83	Apr-July	M	130	58	113
	78	83	Apr-June	M	109	51	94
Tieton River /10/	210	85	Apr-Sept	M	M	148	246
at Tieton Dam	176	85	Apr-July	M	M	131	207
	140	85	Apr-June	M	M	108	165
Naches River /11/	700	81	Apr-Sept	966	998	419	867
nr. Naches	635	81	Apr-July	881	945	380	784
	540	81	Apr-June	770	775	339	667
Ahtanum Creek /12/	37	79	Apr-Sept	M	M	M	47
Nr. Tampico	34	79	Apr-July	M	M	M	43
	29	79	Apr-June	M	M	M	37

- /4/ Observed flow corrected for storage in Lake Keechelus.
- /5/ Observed flow corrected for storage in Keechelus, Kachess, and Cle Elum Lakes and diversion by Kittitas Canal.
- /6/ Observed flow corrected for storage in Keechelus, Kachess, Cle Elum, Bumping, and Rimrock Lakes and diversions by Rosa, Union Gap, New Reservation, Old Reservation and Sunnyside Canals.
- /7/ Observed flow corrected for storage in Lake Kachess.
- /8/ Observed flow corrected for storage in Lake Cle Elum.
- /9/ Observed flow corrected for storage in Bumping Lake.
- /10/ Observed flow corrected for storage in Rimrock Lake.
- /11/ Observed flow corrected for storage in Bumping and Rimrock Lakes and diversions by Tieton, Selah Valley, Wapatox Canals and City of Yakima.
- /12/ Observed flow of North and South Forks (Combined).

Basin, Stream and Station	Forecast Runoff 1984	Seasonal Streamflow in Thousands of Acre-Feet					
		% 20-Yr. Avg.	Fore- cast period	1983	1982	1981	20-Yr. Average 61-80

#### LOWER COLUMBIA RIVER SYSTEM

Mill Creek	17.5	100	Apr-Sept	13.48	24.62	28.5	**17.50
at Walla Walla	17.3	100	Apr-July	13.39	24.48	28.5	**17.33
	17.2	100	Apr-June	13.36	21.63	27.3	**17.15
Lewis River	875	70	Apr-Sept	1255	1170	1096	1249
at Ariel /13/	760	70	Apr-July	1046	1030	971	1086
	673	70	Apr-June	821	927	865	961
Cowlitz River /14/	1650	81	Apr-Sept	1935	4936	M	2038
bl. Mayfield Dam	1440	81	Apr-July	1754	1963	M	1778
	1220	81	Apr-June	1424	1722	M	1502
Cowlitz River /14/	2000	75	Apr-Sept	2618	2655	2390	2673
at Castle Rock	1740	75	Apr-July	2195	2363	2125	2323
	1485	75	Apr-June	1739	2080	1875	1980

#### OLYMPIC PENINSULA

##### DUNGENESS RIVER SYSTEM

Dungeness River	100	63	Apr-Sept	197	196	109	160
nr. Sequim	82	63	Apr-July	158	163	88	130
	61	63	Apr-June	117	117	70	97

##### ELWHA RIVER SYSTEM

Elwha River	375	68	Apr-Sept	538	607	380	**553
nr. Port Angeles	308	68	Apr-July	448	512	316	**454

#### PUGET SOUND

##### SKAGIT RIVER SYSTEM

Skagit River /15/	1770	75	Apr-Sept	1531	1880	1773	**2356
at Newhalem	1480	75	Apr-July	1061	1439	1431	**1972
	1115	75	Apr-June	698	1004	1064	**1485

##### GREEN RIVER SYSTEM

Green River bl.	215	68	Apr-Sept	190	227	268	**316
Howard Hanson Dam/16/	193	68	Apr-July	145	195	245	**284
	174	68	Apr-June	107	174	219	**256

##### CEDAR RIVER SYSTEM

Cedar River	62	67	Apr-Sept	66	80	74	**93
nr. Cedar Falls							

/13/ Observed flow corrected for storage in Lake Merwin, Yale and Swift Reservoirs.

/14/ Observed flow corrected for storage in Riffe Lake and Mayfield Reservoir.

/15/ Observed flow corrected for storage in Diablo, Ross and Gorge Reservoirs.

/16/ Observed flow corrected for storage in Howard Hanson Dam.



# COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of washington stream basins presents the water content of the snow about April 1, 1984, as percent of the same date in 1983 and 1982 and average of record.

Tributary Basin	No. of Courses	1984 Snow Water Expressed		
		1983	1982	1961-80 Ave.
<u>UPPER COLUMBIA BASIN</u>				
Pend Oreille	12	82	87	77
Kettle	7	84	88	90
Colville	3	128	110	103
Spokane	6	86	83	68
Okanogan	23	78	86	83
Methow	2	53	60	74
Chelan	3	83	93	80
Entiat	9	54	60	62
Wenatchee	7	94	97	69
Yakima	17	96	100	77
Antanum	2	81	114	72
<u>LOWER COLUMBIA BASIN</u>				
Cowlitz	2	109	127	92
<u>PUGET SOUND</u>				
White	3	99	115	84
Green	10	120	128	63
Snoqualmie	1	93	65	65
Skykomish	2	109	92	72
Skagit	15	82	79	59
Baker	8	84	91	71
<u>OLYMPIC PENNINSULA</u>				
Morse	1	77	82	79
Elwha	1	71	67	60
Dungeness	1	49	53	55

# RESERVOIR STORAGE - 1000 Acre Feet

BASIN OR STREAM	RESERVOIR	USABLE 1/ CAPACITY	1984	Measured (April) 1983	1982	Normal*
<u>COLUMBIA</u>						
Spokane	Coeur d'Alene Lake	225.1	194.4	163.3	166.7	121.6
Columbia	Franklin D. Roosevelt Lake	5232.0	4455.5	1864.1	1094.0	1260.0
Columbia	Banks Lake	714.9	864.8	690.9	682.9	590.8
Okanogan	Conconully Reservoir	13.0	13.0	13.0	11.5	7.2
Okanogan	Conconully Lake	10.5	10.4	10.4	9.1	7.5
Chelan	Lake Chelan	676.1	296.4	295.1	319.9	294.2
<u>YAKIMA</u>						
Yakima	Keechelus Lake	157.8	145.7	122.3	142.5	108.8
Kachess	Kachess Lake	239.0	221.6	223.3	203.6	189.8
Cle Elum	Lake Cle Elum	436.9	363.2	364.4	148.5	292.1
Bumping	Bumping Lake	33.7	17.6	7.0	5.9	8.6
Tieton	Rimrock Lake	198.0	166.3	145.3	157.2	142.2
<u>PUGET SOUND</u>						
Skagit	Ross Reservoir	1404.1	887.3	712.9	701.5	754.4
Skagit	Diablo Reservoir	90.6	83.8	88.0	86.1	85.7
Skagit	Gorge Reservoir	9.8	7.5	8.4	7.8	8.0

1/ Based on Active Storage  
 \* 15-yr. Average 1963-1977

# PRECIPITATION 1/

## Division Average Observations and Departures

Drainage Divisions	Fall		Winter	
	Sept-Oct Observed	1983 <u>2/</u> Departures	Nov. 1983 - Observed	Mar. 1984 <u>2/</u> Departures
Northeastern Wash	1.55	-1.55	11.78	+2.38
Southeastern Wash	2.54	-0.06	12.22	+1.79
East Slope Cascades	3.76	-0.99	28.14	+0.61
North Central Wash	1.45	-0.14	7.42	+0.88
Northwest Cascades	7.97	-5.24	57.50	+2.11
Southwest Cascades	5.36	-3.32	40.99	-0.65

Northeastern Washington	- Lower Spokane, Colville, Sandpoil, and Lower Kettle Drainages
Southeastern Washington	- Touchet, Tucannon, and Palouse Drainages
East Slope Cascades	- Yakima, Wenatchee, and Chelan Drainages
North Central Washington	- Methow and Okanogan Drainages
Northwest Slope Cascades	- Puget Sound Drainages
Southwest Slope Cascades	- Lower Columbia Drainages

1/ - Preliminary analysis by National Weather Service from data furnished by  
Meteorological Services of Canada and the National Weather Service

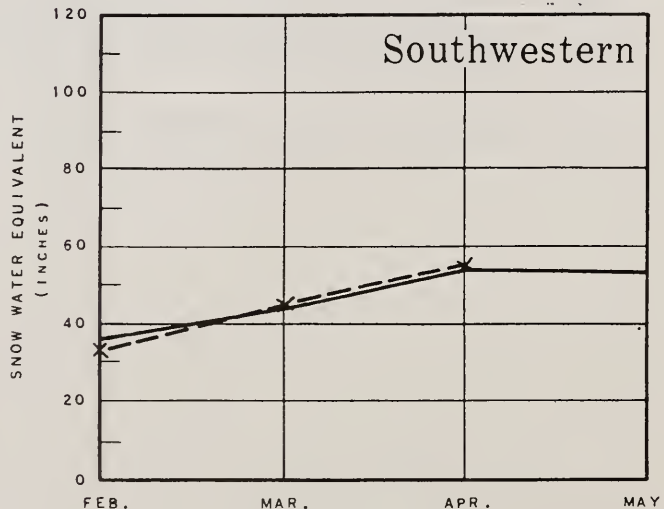
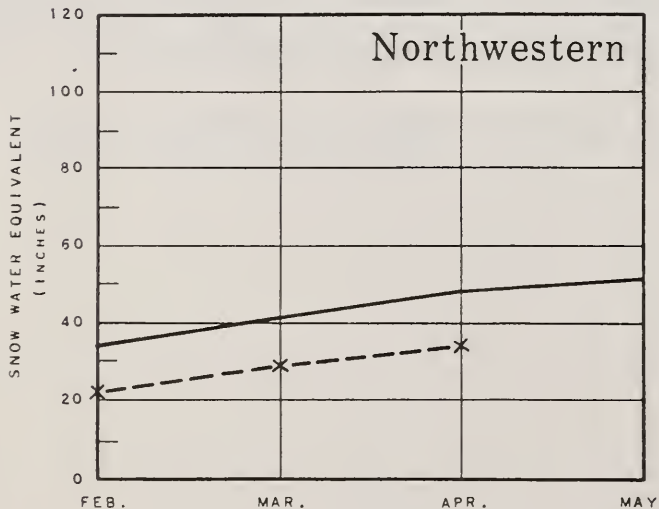
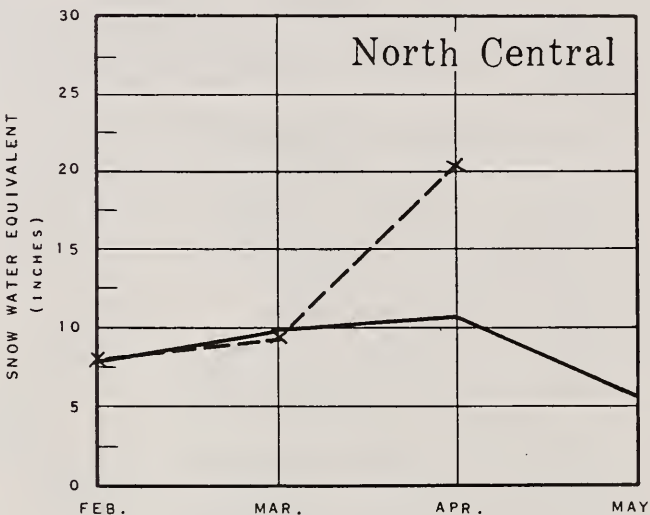
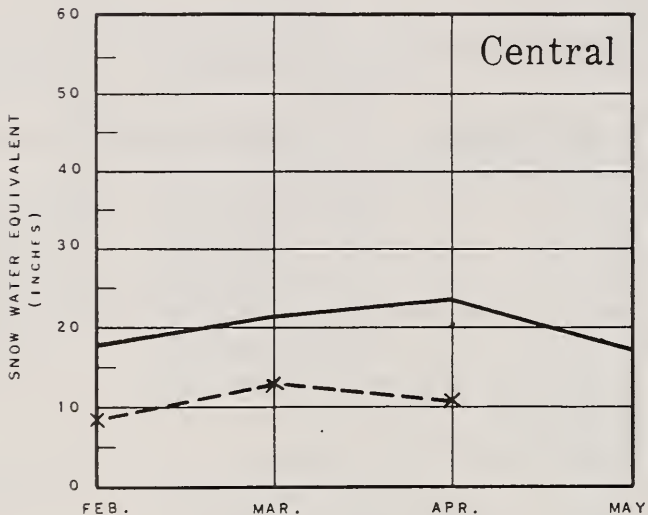
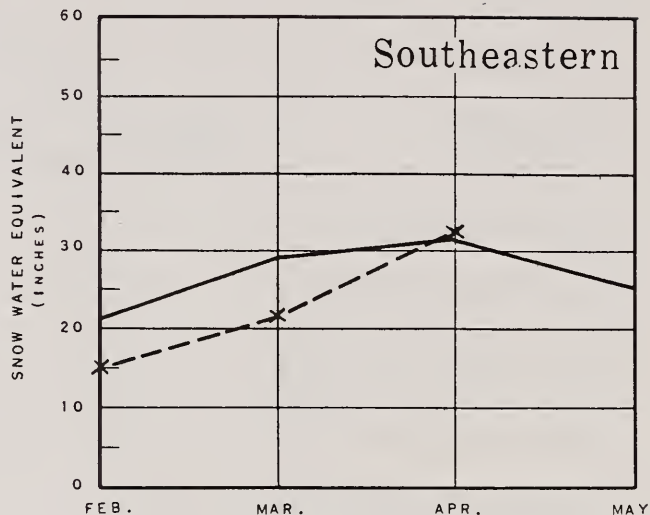
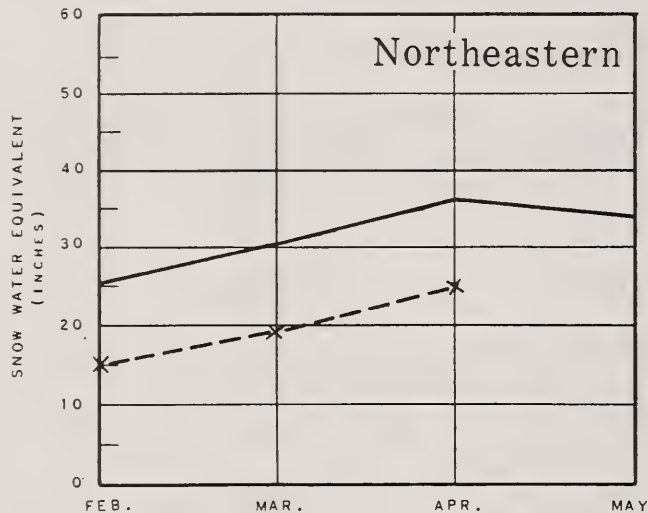
2/ - Departure from 15-year (1958-1972) drainage division average



# WASHINGTON SNOW COVER

1984

## DRAINAGE AREAS



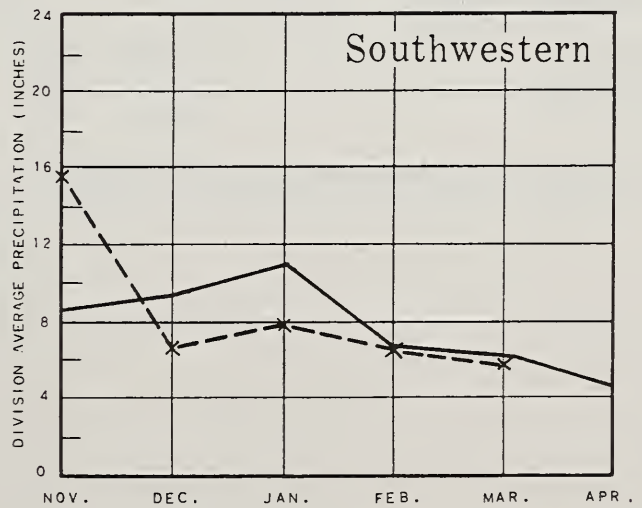
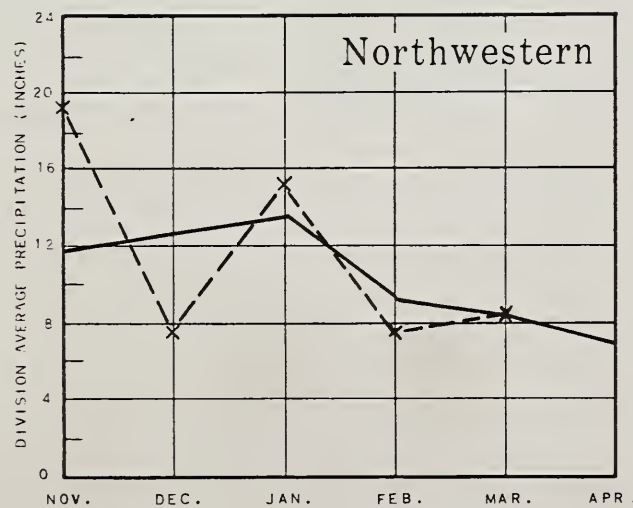
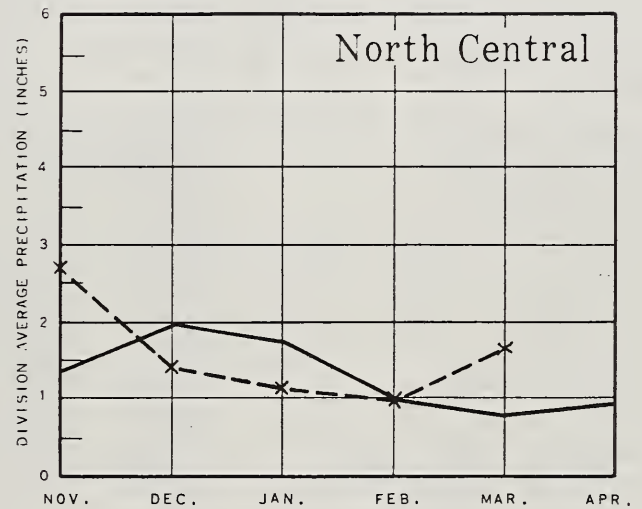
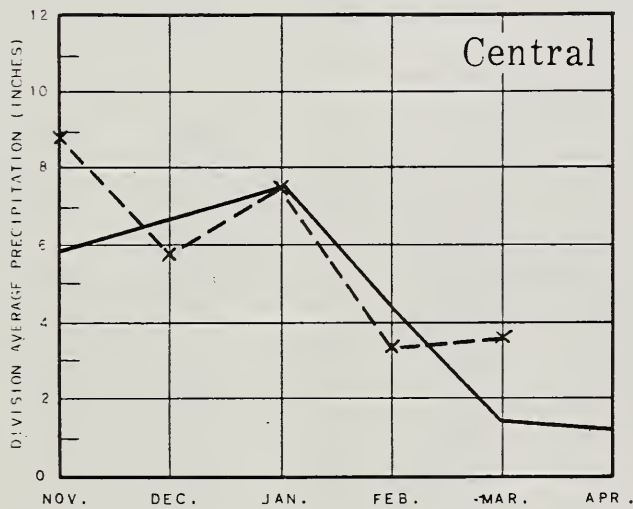
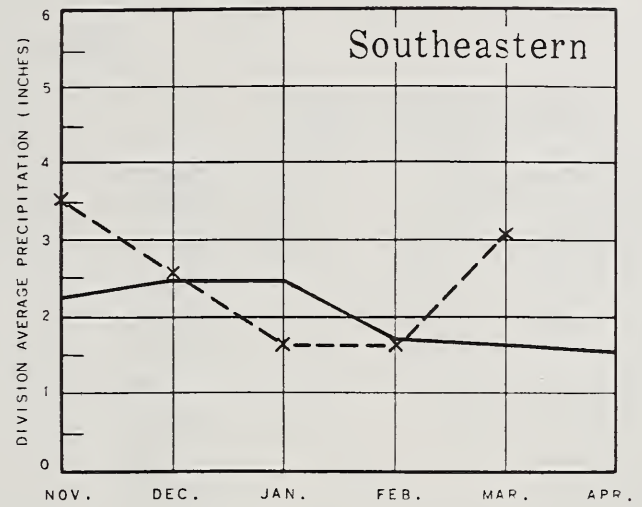
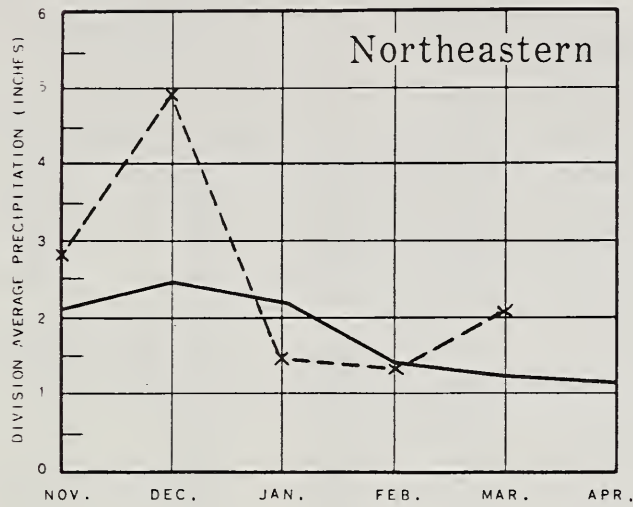
Average —  
1984 - - -

Selected Snow Survey Courses by Soil Conservation Service

# WASHINGTON VALLEY PRECIPITATION

1984

## DRAINAGE AREAS



**Average** —  
**1984** - - -

*Preliminary Analysis by National Weather Service*

**NOTE: Precipitation to end of month**

## SNOW DATA TO APRIL 1, 1984 - APPENDIX 1

## SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

UPPER COLUMBIA DRAINAGEPEND OREILLE RIVER

Benton Meadow	16A02	2344	3/30	0	0.0	0.0	4.9
Benton Spring	16A03	4900	3/30	47	15.3	22.0	19.8
Boyer Mtn	17A02	5250	4/02	68	25.2	29.8	27.0
Bunchgrass Meadow	17A01	5000	3/30	78	28.5	27.1	30.6
Chewelah	17A04	4925	3/31	50		17.1	14.7
Heart Lake Trail	14C10	4800	4/02	40	15.8	15.4	23.8
Hoodoo Basin	15C10	6000	4/02	101	39.3	46.2	53.6
Hoodoo Creek	15C01	5900	4/02	94	36.2	41.4	49.9
Lookout	15B02	5250	3/30	69	25.4	29.0	38.6
Nelson	2D04CA	3050	3/29	26	8.8	13.5	15.6
Schweitzer Bowl	16A06	4500	3/29	64	22.8	40.1	30.2
Schweitzer Ridge	16A05	6100	3/29	107	42.7	49.0	47.9

KETTLE RIVER

Barnes Creek	2B06CA	5300	3/27	61	18.9	18.9	20.9
Big White Mtn.	2E03CA	5500	3/30	63	20.4	24.5	20.6
Butte Creek	18A03	4070	3/31	33	12.0	11.3	8.6
Carmi	2E02CA	4100	3/31	20	5.7	6.5	6.6
Farron #1	2B02CA	4000	Not Measured			13.6	9.4
Farron #2	2.b02aC	4000	3/29	38	13.3	17.9	13.1
Goat Creek	18A04	3595	3/31	Trace	0.1		5.5
Moashee Pass	2E01CA	4500	3/29	40	12.6	12.9	14.9
Summit G.S.	18A05	2150	3/31	34	11.4	8.1	7.3
Trapping Creek Lower	2E05CA	3050	3/31	8	2.6	2.5	3.9
Trapping Creek Upper	2E04CA	4450	3/30	27	8.3	10.7	10.2

COLVILLE RIVER

Baird	17A06	3215	3/31	17	5.8	4.5	5.7
Chewelah	17A04	4925	3/31	50	17.1		14.7
Togo	18A10	3370	3/31	33	11.4		12.6

# Average based on 1961-1980 averages.



## SNOW DATA TO APRIL 1, 1984 - APPENDIX 2

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

SPOKANE RIVER

Above Burke	15B08	4100	3/30	37	14.2	15.4	24.0
4th of July Summit	16B03	3100	3/28	14	5.0	0.0	7.9
Lookout	15B02	5250	3/30	69	25.4	29.0	36.3
Mosquito Ridge	16A04	5110	3/31	78	28.7	42.6	38.9
Sherwin	16C01	3200	3/30	26	9.2	3.6	13.2
Sunset	15B09A	5600	3/31	64	22.6	35.5	33.1

NEWMAN LAKE

Ragged Ridge	17B02	3333	3/01	0	0.0	0.0	New
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OKANOGAN RIVER

Aberdeen Lake	1F01CA	4300	3/30	16	4.6	7.6	6.2
Blackwall Peak	2G03CA	6250	4/02	65	24.9	34.5	34.9
Brenda Mine	2F18CA	4800	3/29	44	13.2	13.5	13.9
Brookmere	1C01CA	3200	3/31	12	4.2	7.8	9.5
Enderby	1F04CA	6250	3/29	107	40.0	43.7	38.9
Esperon Creek Lower	2F15CA	4400	Not Measured				7.8
Esperon Creek Middle	2F15CA	4700	"	"			10.2
Esperon Creek Upper	2F13CA	5400	"	"			10.6
Grayback Reservoir	2F08CA	5225	3/29	43	11.6	11.5	9.3
Hamilton Hill	2G06CA	4900	4/03	24	7.4	12.4	15.8
Harts Pass	20A05A	6500	3/29	97	33.1	42.2	46.4
Isintok Lake	2F11CA	6300	3/31	20	5.5	7.4	8.3
Lost Horse Mountain	2G04CA	7000	Not Measured			8.0	8.5
McCulloch	2F03CA	4200	3/29	17	5.0	6.1	6.7
Missezula Mtn.	2G05CA	5100	Not Measured			8.6	9.1
Mission Creek	2F05CA	6000	3/29	65	20.2	21.4	20.2
Monashee Pass	2E01CA	4500	3/29	39	12.6	12.9	14.9
Mount Kobau	2F12CA	5960	3/30	40	10.9	18.1	12.8

# Average based on 1961-1980 averages.

## SNOW DATA TO APRIL 1, 1984 - APPENDIX 3

**SNOW**

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

OKANOGAN RIVER (CONT.)

Mutton Creek No. 1	19A01	5700	Not Measured				11.8
Mutton Creek No.2 SP	19A11	6000	Not Measured				New
Nickel Plate	2G02CAN	6200	3/29	24	6.7	7.6	8.3
Oyama Lake	2F19CAN	4400	3/29	23	6.3	8.9	6.7
Postill Lake	2F07CAN	4500	3/29	28	8.3	10.1	9.1
Rusty Creek	19A03	4000	3/30	16	6.1	7.4	6.6
Salmon Meadows	19A02	4500	Not Measured		9.3	13.2	9.3
Silver Star Mountain	2F10CAN	6050	3/31	77	28.0	34.6	28.6
Summerland Reservoir	2F02CAN	4200	3/31	25	7.8	10.0	9.4
Sunday Summit	2G01CAN	4300	4/02	3	.4	1.4	5.2
Trout Creek	2F01CAN	4700	3/26	15	3.5	5.8	7.6
Vaseux Creek	2F20CAN	4600	3/29	27	6.9	8.9	6.7
White Rocks Mountain	2F09CAN	6000	3/30	67	23.9	30.2	23.5

METHOW RIVER

Harts pass	20A05A	6500	3/29	97	33.1	42.2	46.4
Mutton Creek NO. 1	19A01	5700	Not Measured			16.1	11.8
Mutton Creek No. 2 SP	19A11	6000	Not Measured				New
Rusty Creek	19A03	4000	3/30	16	6.1	7.4	6.6
Salmon Meadows	19A02	4500	Not Measured			13.2	9.3

CHELAN LAKE BASIN

Cloudy Pass +	20A22	6500	Not Measured				35.2
Lyman Lake	20A23	5900	3/27	137	54.6	61.3	61.8
Little Meadows +	20A24a	5275	Not Measured			37.6	37.6
Mirror Lake	30A39	5600	3/27	79	26.7	36.9	New
Park Creek Ridge	20A12	4600	3/27	86	34.8	43.7	45.5
Rainy Pass	20A09	4780	3/29	79	30.0	35.4	41.8

# Average based on 1961-1980 averages.

+ Aerial stadia observation.



## SNOW DATA TO APRIL 1, 1984 - APPENDIX 4

**SNOW**

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

ENTIAT RIVER

Brief	20B19	1600	3/30	0	0.0	0.0	3.8
Entiat Meadows +	20A33	4540	3/30	75	26.2	59.2	49.3
Entiat River Trail +	20A34	3325	3/30	25	8.2	21.0	19.5
Fox Camp +	20A36	6510	3/30	100	40.0	81.6	59.0
Pope Ridge	20B20	3450	3/30	40	13.7	18.7	18.6
Pugh Ridge +	20A32	6725	3/30	63	23.3	48.4	38.5
Shady Pass	20A37	6200	3/30	66	24.4	33.3	31.4
Snow Brushy +	20A35	3910	3/30	74	27.4	41.2	38.9
Tommy Creek +	20B21	4900	3/30	43	14.2	30.4	25.9

WENATCHEE RIVER

Berne Mill Creek	21B23	3170	3/29	53	18.8	23.4	28.7
Berne Mill Creek SP	21B41	3240	3/29	35	13.6	20.1	
Blewett Pass No. 2	20B02	4270	3/27	32	11.8	15.9	16.4
Chiwaukum G. S.	20B16	1810	3/29	17	6.4	8.0	15.9
Lake Wenatchee	20B05	1970	Watershed Logged Discontinued				
Lyman Lake	20A23	5900	3/27	137	54.6	61.3	61.8
Merrett	20B18	2140	3/29	0	0.0	.0	
Stevens Pass	21B01	4070	3/29	97	40.3	42.8	53.0
Stevens Pass Sand Shed	21B45	3700	3/29	68	25.0	30.4	37.5

COLOCKUM CREEK

Trough #2(SP)	20B25	5310	3/29	11	3.3	25.5	11.9
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+ Aerial stadia observation

# Average based on 1961-1980 averages.

## SNOW DATA TO APRIL 1, 1984 - APPENDIX 5

## SNOW

DRAINAGE BASIN and or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

SQUILCHUCK CREEK

Beehive Springs	20B03	4400	3/29	12	5.1	10.4	7.9
Scout-a-Vista	20B04	3400	Not Measured			7.2	8.2

STEMILT CREEK

Stimelt Slide	20B06	5000	3/29	25	9.7	21.4	13.6
Upper Wheeler(SP)	20B07	4400	3/29	39	11.3	16.8	8.6

YAKIMA RIVER

Ahtanum R.S.	21C11	3100	3/28	8	3.2	7.0	5.8
Big Boulder Creek	21B09	3200	3/28	36	12.6	12.2	18.4
Blewet Pass No. 2	20B02	4270	3/29	32	11.8	15.9	16.4
Bumping Lake Old	21C08	3450	3/30	25	9.0	15.2	15.7
Bumping Lake New	21C36	3400	3/30	34	12.7	20.0	20.6
Cayuse Pass	21C06	5300	3/29	178	78.6	99.2	88.1
Colockum Pass	20B09	5370	3/27	49	16.8	26.4	14.2
Corral Pass	21B13	6000	3/29	81	31.2	36.5	41.3
Fish Lake	21B04	3371	3/28	65	26.9	28.0	34.0
Green Lake	21C10	6000	3/27	66	26.0	44.9	34.6
Grouse Camp	20B11	5385	3/26	42	15.6	30.4	17.1
Lake Cle Elum	21B14	2200	3/27	0	0.0	0.0	5.5
Morse Lake	21C17	5400	3/27	114	46.7	67.8	57.5
Olallie Meadows	21B02	3625	3/30	71	31.7	20.7	48.4
Stampede Pass	21B10	3860	4/01	94	43.5	39.4	43.0
Tunnel Avenue	21B08	2450	3/27	29	11.0	9.4	23.7
White Pass E. Side	21C28	4500	3/29	59	24.2	27.0	24.9

# Average based on 1961-1980 Averages.

s Snow pillow reading.



## SNOW DATA TO APRIL 1, 1984 - APPENDIX 6

**SNOW**

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

AHTANUM CREEK

Ahtanum R. S.	21C11	3100	3/28	8	3.2	7.0	5.8
Green Lake	21C10	6000	3/27	66	26.0	44.9	34.6

LOWER COLUMBIA DRAINAGEMILL CREEK

High Ridge SP	18D19	4150	3/30	92	36.0s	28.9	
Touchet # 2 SP	17C55	5530	3/30		32.5s	37.9	

COWLITZ RIVER

Cayuse Pass	21C06	5300	3/29	178	78.6	99.2	88.1
White Pass E. Side	21C28	4500	3/29	59	24.4	27.5	23.1

PUGET SOUND DRAINAGEWHITE RIVER

Cayuse Pass	21C06	5300	3/29	178	78.6	99.2	88.1
Corral Pass	21B13	6000	3/29	81	31.2	36.5	41.3
Morse Lake	21C17	5400	3/27	114	46.7	67.8	57.5

GREEN RIVER

Airstrip	21B24	1800	4/04	0		0.0	1.6
Charley Creek	21B25	1200	4/04	0		0.0	0.0
Cougar Mountain	21B42	3200	4/04	31	12.2	2.7	20.6
Grass Mtn. No. 2	21B27	2900	4/04	19	5.3	0.0	21.4
Grass Mtn. No. 3	21B28	2100	4/04	0		0.0	3.9
Lester Creek	21B29	3100	4/04	42	13.2	10.4	25.9
Lynn Lake	21B50	4000	4/04	41	11.5	1.7	25.1
Sawmill Ridge	21B31	4700	4/04	67	20.8	24.6	39.5
Stampede Pass	21B10	3860	4/01	94	43.5	39.4	43.0
Twin Camp	21C30	4100	4/04	53	16.3	18.1	26.4

# Average based on 1961-1980 averages  
s Snow Pillow

## SNOW DATA TO APRIL 1, 1984 - APPENDIX 7

## SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

SNOQUALMIE RIVER

Olallie Meadows	21B02	3625	3/30	71	31.7	20.7	48.4
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SKYKOMISH RIVER

Stevens Pass	21B01	4070	3/29	97	40.3	42.8	53.0
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Stevens Pass Sand Shed	21B45	3700	3/29	68	25.0	30.4	37.5
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SKAGIT RIVER

Beaver Creek Trail	21A04	2200	3/29	3	1.2	6.3	13.5
Beaver Pass	21A01	3680	3/30	46	17.9	28.6	32.2
Brown Top Ridge	21A28	6000	3/29	124	46.8	53.2	65.7
Devils Park	20A04	5900	3/29	80	27.6	38.6	45.8
Freezeout Creek Trail	20A01	3500	3/29	13	4.8	8.7	12.6
Freezeout Meadows New	20A38	5000	3/29	52	17.9	37.7	35.7
Granite Creek	21A29	3500	3/30	26	9.2	15.8	19.2
Harts Pass	20A05A	6500	3/29	97	33.1	42.2	46.4
Klesilkwa	3D03ACA	3700	3/29	4	1.5	5.5	15.2
Lightning Lake	3D02CAN	4000	4/02	22	7.4	10.3	14.3
Lyman Lake	20A23	5900	3/27	137	54.6	61.3	61.8
Meadow Cabins	20A08	1900	3/29	0	0.0	0.0	5.8
New Hozomeen Lake	21A30	2800	3/29	3	1.5	6.0	13.2
Rainy Pass	20A09	4780	3/30	79	30.0	35.4	41.8
Thunder Basin	20A07	4200	3/29	33	10.8	18.5	23.5

# Average based on 1961-1980 averages

## SNOW DATA TO APRIL 1, 1984 - APPENDIX 8

**SNOW**

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

BAKER RIVER

Dock Butte +	20A11A	3800	3/29	126	53.0	63.0	70.4
Easy Pass +	21A07A	5200	3/29	140	60	83.0	90.9
Jasper Pass +	21A06A	5400	3/29	167	69	100.	89.9
Martin Lake	21A09A	3600	3/29	142	60.0	78.0	75.6
Mt. Blum +	21A18A	5800	3/29	138	58.0	72.0	63.0
Rocky Creek	21A12A	2100	3/29	28	12.0	6.0	29.8
Schreibers Meadow	21A10A	3400	3/29	86	37.0	45.0	64.6
S.F. Thunder Creek +	21A14A	2200	3/29	0	0.0	0.0	6.6
Watson Lake	21A08A	4500	3/29	116	48.0	65.0	69.1

OLYMPIC PENINSULA DRAINAGEDUNGENESS RIVER

Deer Park	23B04	5200	3/27	30	11.7	25.6	21.4
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MORSE CREEK

Cox Valley	23B14	4500	3/29	77	32.1	45.6	40.8
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ELWHA RIVER

Hurricane	23B03	4500	3/31	38	14.7	22.5	24.6
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+ Aerial stadia observation

# Average based on 1961-1980 average



## SNOTEL READINGS, APRIL 1, 1984 - APPENDIX J

**SNOW**

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

PEND OREILLE RIVER

Bunchgrass Meadow	17A01	5000	3/15		23.1	36.6
	GT		3/30	83	29.2	27.12
			4/01		26.2	38.3

OKANOGAN & METHOW RIVERS

Harts Pass	20A05	6500	3/15		30.6	44.1
	GT		3/29	90	29.8	39.3
			4/01		34.7	48.6
Salmon Meadow	19A02	4500	3/16		17.6	27.9
			3/31		20.5	32.2

CHELAN LAKE BASIN

Lyman Lake	20A23	5900	3/15		55.7	58.0
	GT		3/27	137	(54.6)	61.3
			4/01		62.1	65.3
Mirror Lake	20A39	5600	3/15		25.9	
	GT		3/27	79	(26.7)	36.9
			3/28		28.5	39.5
Park Creek Ridge	20A12	4600	3/16		32.6	36.0
			3/27	86	(34.8)	41.2
			4/01		35.3	48.3
Rainy Pass	20A09	4780	3/20		30.4	42.2
	GT		3/29	79	(26.8)	33.0
			4/01		32.3	45.2

ENTIAT RIVER

Pope Ridge	20B20	3450	3/15		16.8	17.6
	GT		3/30	38	(13.0)	19.4
			4/01		15.7	16.9

WENATCHEE RIVER

Blewett Pass	20B02	4270	3/15		17.9	19.2
	GT		3/27		15.1	
			4/01		18.4	21.0
Lyman Lake	20A23	5900	3/15		55.7	58.0
	GT		3/27	137	54.6	65.3
			4/01		62.1	65.3
Stevens Pass	21B01	4070	3/15		33.2	23.0
	GT		3/29	86	(35.8)	
			4/01		37.1	23.9
Trough # 2	20B25	5300	3/15		2.8	20.0
	GT		3/29	11	(3.3)	25.5
			4/01		2.0	24.1

GT = Ground Truth measurement at SNOTEL site

## SNOTEL READINGS, APRIL 1, 1984 - APPENDIX 2

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

COLOCKUM CREEK

Trough # 2	20B25	5300	3/15		2.8	20.0
	GT		3/29	6	(3.3)	25.5
			4/01		2.0	24.1

STEMILT CREEK

Upper Wheeler	20B07	4400	3/15		13.3	16.8
	GT		3/29	38	(11.3)	16.8
			4/01		20.0	18.7

YAKIMA RIVER

Big Boulder Creek	21B09	3200	3/15		14.9	17.1
		GT	3/28	36	12.6	16.0
			4/01		14.2	16.6
Bumping Ridge	21C38	4600	3/15		26.4	
	GT		3/30	65	25.2	
			4/01		27.9	
Corral Pass	21B13	6000	3/15		6.5	31.1
			4/01		8.2	26.5
Fish Lake	21B04	3371	3/15		27.5	
	GT		3/28	65	26.9	28.0
			4/01		28.5	
Green Lake	21C10	6000	3/15		17.4	31.1
	GT					28.3
			4/01		18.3	34.2
Grouse Camp	20B11	5385	3/15		16.2.	23.9
	GT		3/26	54	18.8	27.3
			4/01		17.6	27.3.
Morse Lake	21C17	5400	3/15		50.0	73.8
			4/01		55.8	80.0
White Pass E. Side	21C28	4500	3/15		22.0	20.5
	GT		3/29	59	24.4	23.0
			4/01		23.4	27.0

GT = Ground Truth measurement at SNOTEL site

## SNOTEL READINGS, APRIL 1, 1984 - APPENDIX 3

**SNOW**

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

AHTANUM CREEK

Green Lake	21C10	6000	3/15		17.4	31.1	
	GT		3/27	66	26.0	44.9	
			4/01		18.3	34.2	

TOUCHET RIVER

Touchet # 2	17C5	5530	3/15		28.2	32.3	
	GT		3/01	69	22.0		
			4/01		32.5	37.9	

LEWIS RIVER

June Lake	22C09	3200	3/15			25.5	
	GT		3/30	61	32.5	26.0	
			4/01			26.0	
Lone Pine Shelter	21C26	3800	3/15		32.5	38.9	
	GT		3/30	70	28.3	44.9	43.0
			4/01		34.4	44.9	
Plains of Abraham	22C01	4400	3/15		72.8		
			4/01		83.0		
Sheep Canyon	22C10	4050	3/15		33.8		
			4/01		37.7		
Spencer Meadow	21C20	3400	3/15		19.0	26.7	
			4/01		20.7	30.2	
Surprise Lake	21C13	4250	3/15		47.8	49.1	
	GT		3/30	98	43.0	55.7	52.1
			4/01		55.7	55.7	

COWLITZ RIVER

Pigtail Peak	21C33	5900	3/15		39.3	41.1	
	GT		3/27	107	41.5	41.1	68.4
			4/01		44.7	45.8	
Potato Hill	21C14	4500	3/15		20.0		
	GT		3/27	57	22.8	48.4	38.5
			4/01		20.8		
Sheep Canyon	22C10	4050	3/15		33.8		
			4/01		37.7		
Strawberry Landing	22C08	3280	3/15			35.5	
	GT			92	44.0	39.9	
			4/01			32.8	

GT = Ground Truth measurement at SNOTEL sites



## SNOTEL READINGS, APRIL 1, 1984 - APPENDIX 4

**SNOW**

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

NISQUALLY RIVER

Paradise Park	21C35	5500	3/15		28.0		
			4/01		24.5		

WHITE RIVER

Corral Pass	21B13	6000	3/15		6.5	31.1	
	GT		3/29	81	31.2	36.5	41.3
			4/01		8.2	26.5	
Morse Lake	21C17	5400	3/15		50.8	73.8	
	GT		3/27	114	46.7	67.8	57.5
			4/01		55.8	80.0	

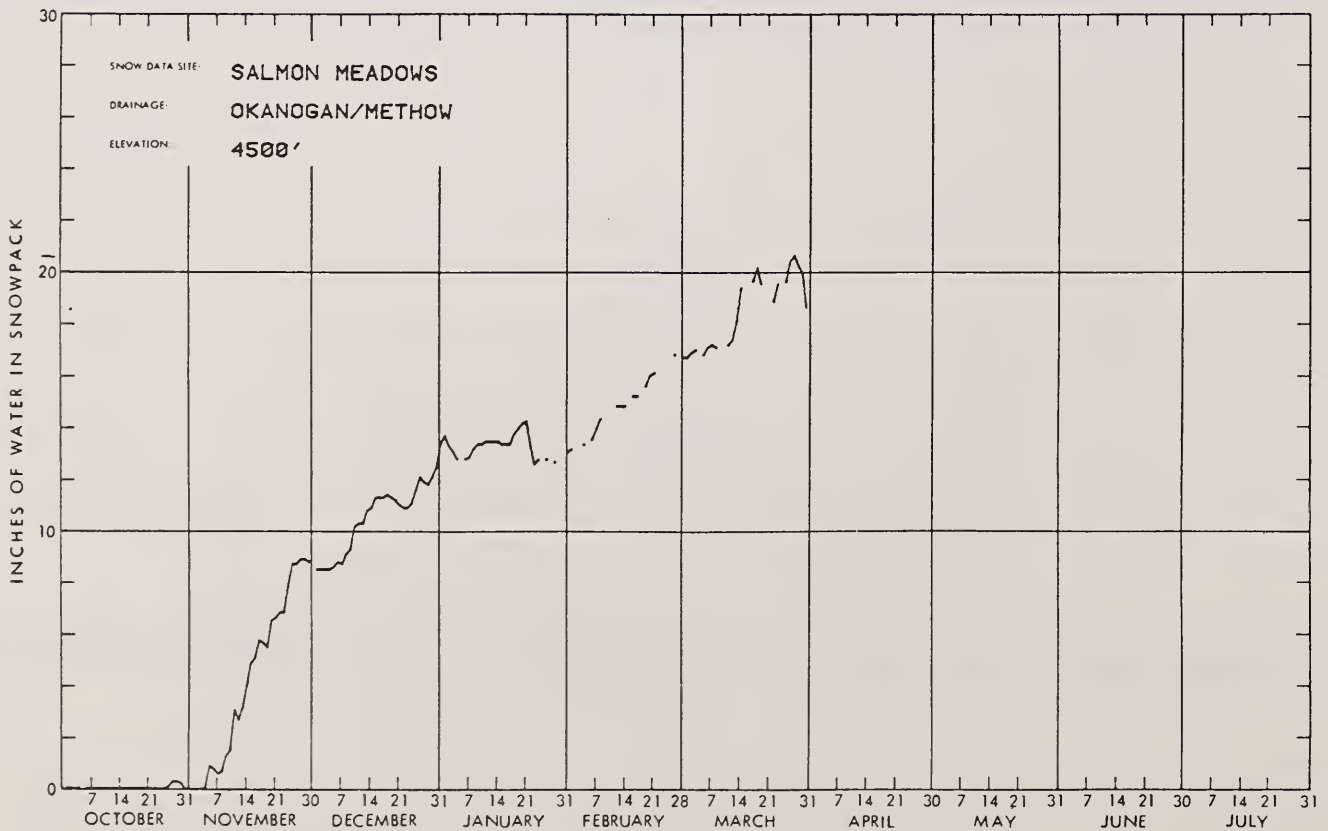
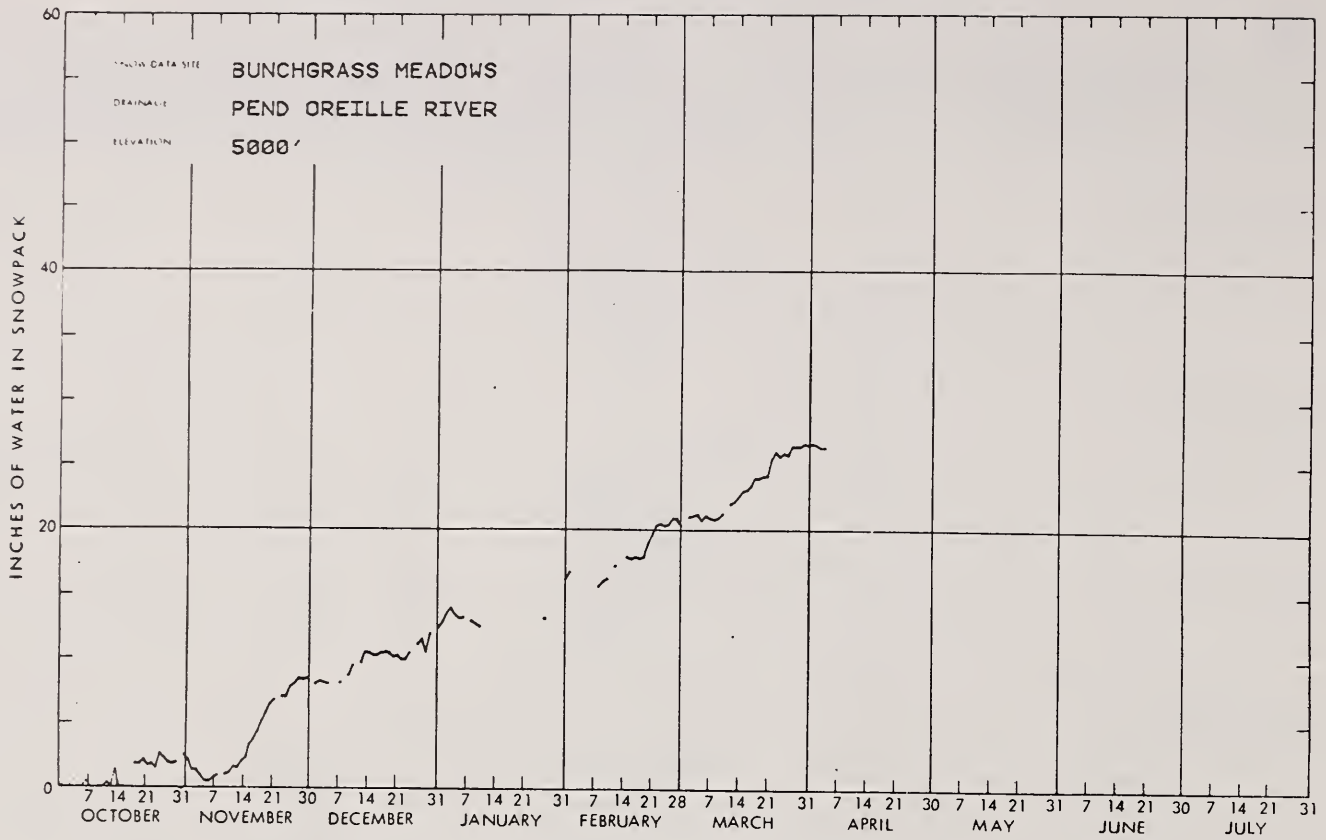
GREEN RIVER

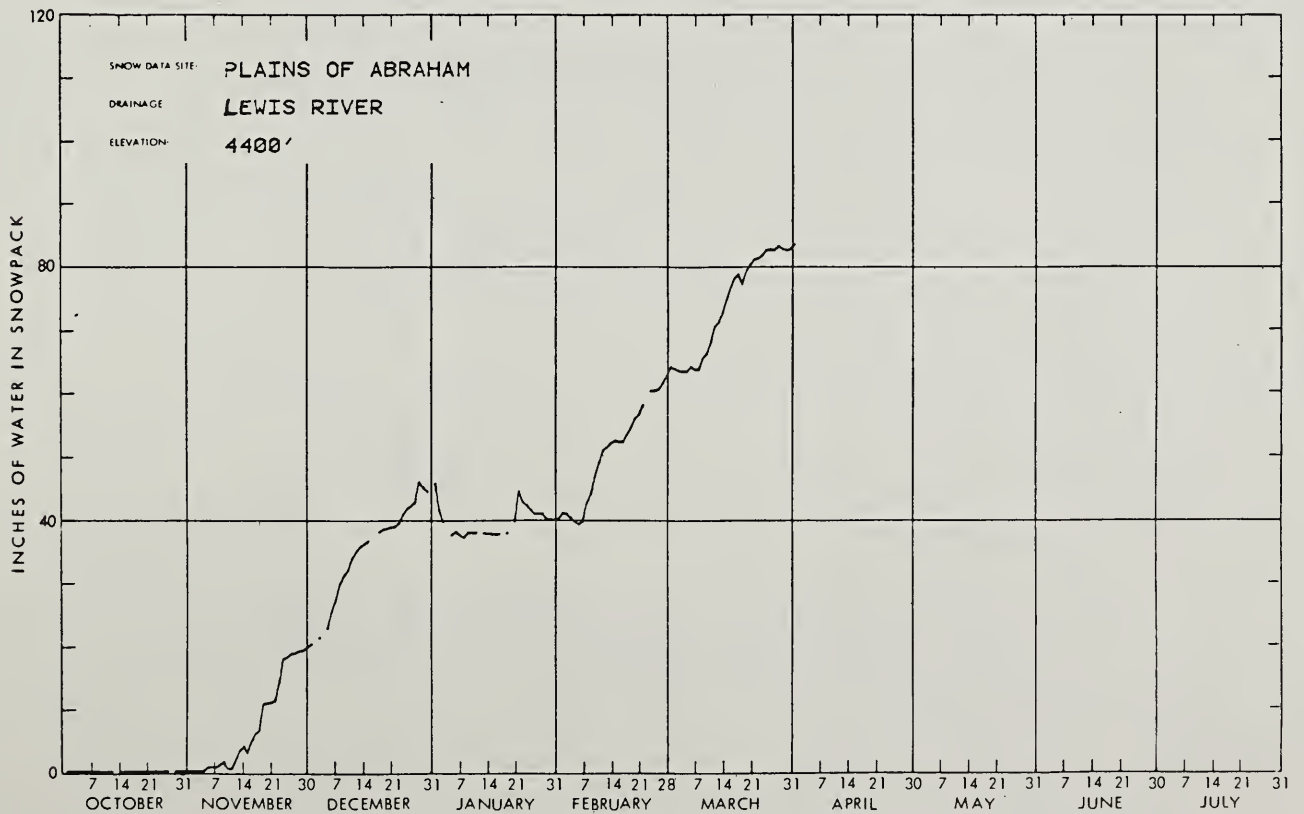
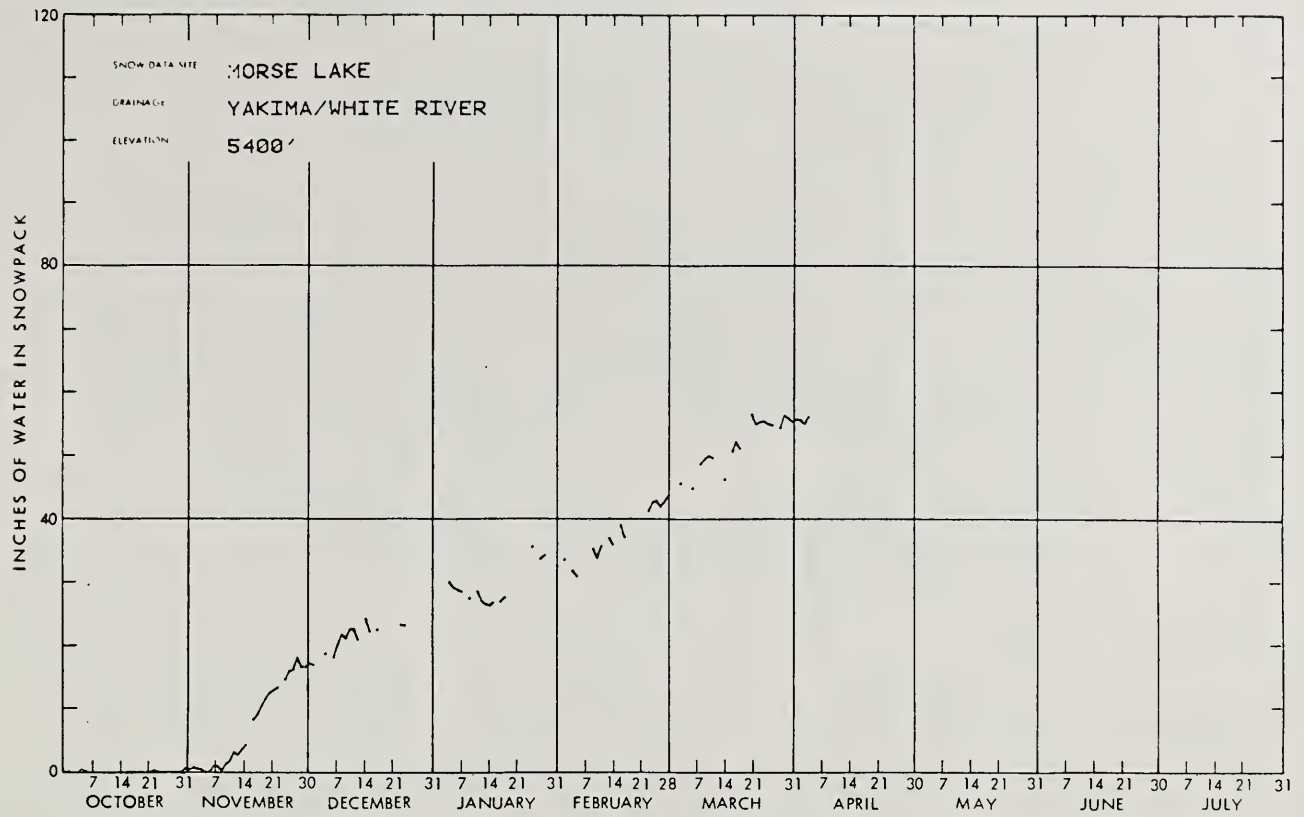
Cougar Mountain	21B42	3200	3/15		13.9	2.7	
	GT		3/29	31	12.2	2.7	20.6
			4/01		14.1	.6	
Stampede Pass	21B10	3960	3/15		38.6	31.8	
	GT		4/01	94	36.0	33.0	
			4/01		42.7	36.2	

SNOQUALMIE RIVER

Olallie Meadows East	21B55	3960	3/15		45.2	43.9	
			4/01		50.7	49.7	

GT = Ground Truth measurements at SNOTEL sites









# Agencies Assisting with Snow Surveys

## GOVERNMENT AGENCIES

### Canada:

Ministry of the Environment, Water  
Investigations Branch, Victoria, British Columbia

### States:

Washington State Department of Ecology  
Washington State Department of Natural Resources

### Federal:

Department of the Army  
Corps of Engineers  
U.S. Department of Agriculture  
Forest Service  
U.S. Department of Commerce  
NOAA, National Weather Service  
U.S. Department of the Interior  
Bonneville Power Administration  
Bureau of Reclamation  
Geological Survey  
National Park Service

## PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.  
Pacific Power and Light Company  
Puget Sound Power and Light Company  
Washington Water Power Company

## OTHER PUBLIC AGENCIES

Okanogan Irrigation District  
Wenatchee Heights Irrigation District

## MUNICIPALITIES

City of Tacoma  
City of Seattle

*Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.*

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